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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

D AGOSTA, STEPHEN M

ART UNIT

PAPER NUMBER

2683

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/620,776	Applicant(s) DIFONZO ET AL.	
	Examiner Stephen M. D'Agosta	Art Unit 2683	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 October 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-5,7-13,15-18,20-22,24,25,27-30 and 32-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-5,7-13,15-18,20-22,24,25,27-30 and 32-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 1-43 have been considered but are moot in view of the new ground(s) of rejection. New art is added and the modified office action is found below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-4, 7-13, 15, 18, 20-21 and 24-25, 27-30, 31-33 and 35 rejected under 35 U.S.C. 103(a) as being unpatentable over Briley US 6,456,610 and further in view of Honcharenko US 6,349,217 (hereafter Briley and Honcharenko).

As per **claims 1, 12, 18, and 29**, Briley teaches a wireless communication network (abstract) comprising:

A plurality of nodes (abstract), each having at least one dynamically directionally controllable communications link (abstract teaches an electronic scanning antenna that can rotate the beam to the terminals, C1, L5-11 and L49-67) wherein each of the dynamically controllable links comprises;

A network controller for dynamically changing the direction of the controllable communications links of the nodes to enable transmission of signals between nodes (figure 5, #512 shows the scan control assembly). With reference to claim 18, Briley teaches a system (eg. hubs) having at least one dynamically directionally controlled communications link and a plurality of subscriber units (eg. remote nodes) [figure 5 shows the BTS(s) and subscriber nodes], **But is silent on a narrow-angle beam for transmitting signals via the communications link and a wide-angle beam for acquiring the communications link.**

The examiner notes that Briley teaches both Omni and Directional antennas for a BTS (C1, L28-33).

Honcharenko teaches a multi-mode/multi-rate wireless system that has a BTS antenna array beam former arranged to produce a broad/wide antenna beam to receive random signals from subscribers within the coverage area and a narrow beam for receiving/transmitting data to/from the subscribers (abstract and figure 1, C2, L35-44).

It would have been obvious to one skilled in the art at the time of the invention to modify Briley, such that it uses wide/narrow beams for acquisition/data transmission, to provide means for acquiring the signal via a wide "sweep" and then locating the user and transmitting data via a highly-focused narrow beam.

As per **claims 3 and 20**, Briley teaches claim 1 wherein selected ones of the nodes further include an additional dynamically controllable communications link (C15, L3-14 teaches changing the data rate, eg. dynamically controlling the communications link).

As per **claims 8 and 25**, Briley teaches claim 1 wherein each node includes an antenna producing at least one dynamically directionally controllable beam (figure 1, #12 shows the BTS with at least one steerable antenna).

As per **claims 9 and 26**, Briley teaches claim 8 wherein each of the controllable beams is a narrow beam (C1, L28-33).

As per **claims 10, 16, 17 and 33**, Briley teaches claim 1 and means for connecting one of said nodes to a backbone circuit (figure 1 shows BTS having a link #21 to the PSTN).

As per **claims 14, 19, 26 and 36**, Briley teaches claim 1 and continuous scanning and includes phase shifters (eg. Briley teaches a continuous scanning electronic antenna (C8, L32-47). Such continuous scanning is realized by using

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continuously changing control signals on control lines CL.sub.1 to CL.sub.M. With a continuous scan system, an infinite number of beam pointing locations are obtainable over the scanning sector. Conversely, in a discrete scanning system employing discretely changing phase shifters such as P-I-N diode phase shifters, the number of beam pointing locations are limited, and sidelobes tend to be higher. (This is also the case for the electronic switching type of scan system). Moreover, with discrete systems there is a finite switching time between beam pointing locations, which reduces the number of RF cycles associated with each data bit).

As per **claim 41**, Briley teaches an electronic scanning antenna that can rotate the beam to the terminals (C1, L5-11 and L49-67).

Claims 4, 7, 11, 13, 15, 21, 24, 28, 30 and 32 rejected under 35 U.S.C. 103(a) as being unpatentable over Briley and Hocharenko and further in view of Natarajan et al. US 5,790,070 (hereafter Natarajan).

As per **claims 4, 13, 21 and 30**, Briley/Hocharenko teaches claim 1 **but is silent on** further comprising a low data rate signaling channel for transmitting control information from the network controller to the nodes.

Natarajan teaches schedule/control information is sent from the satellite/BTS to the subscriber units (C6, L35-40).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Briley/Hocharenko, such that a low data rate signaling channel for transmitting control information from the network controller to the nodes, to provide means for sending control data to/from the users if/when the real-time RF environment requires changes to the RF link.

As per **claims 7, 15, 24 and 32**, Briley/Hocharenko teaches claim 1 **but is silent on** wherein the controller changes direction of the links during a guard interval between the transmit/receive of information signals between pairs of nodes (C5, L1-20 discusses

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subscriber requests being translated into time intervals and C6, L25-30 details taking into account interference and/or antenna imposed constraints).

Natarajan teaches subscriber requests being translated into time intervals (C5, L1-20) and details taking into account interference and/or antenna imposed constraints (C6, L25-30).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Briley/Hocharenko, such that the controller changes direction of the links during a guard interval between the transmit/receive of information signals between pairs of nodes, to provide means for decreasing interference between nodes during transmit/receive.

As per **claims 11 and 28**, Briley/Hocharenko teaches claim 1 **but is silent on** wherein at least one node is a satellite and at least one other node is a ground station.

Natarajan teaches a system with both ground and satellite components (figures 1 and 2 depict this scenario).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Briley/Hocharenko, such that satellite and ground nodes are used, to provide means for communications via both ground and terrestrial terminals.

Claims 5 and 22 rejected under 35 U.S.C. 103(a) as being unpatentable over Briley/Honcharenko in view of Elson et al. U.S. Patent 6,317,100 (hereafter referred to as Elson).

As per **claims 5 and 22**, the combination teaches claim 5 **but is silent on** wherein the signaling channel includes a wide-angle antenna beam ~~at each of the~~ nodes

Briley does teach that each antenna can project its beam over several microcells C4, L35-36 AND one skilled in the art would provide narrow and/or wide angle antenna beams.

Elson teaches an antenna system adapted to provide antenna beams having various characteristics whereby the antenna system is adapted to provide wide antenna beams (on the forward link) [ABSTRACT]. One skilled in the art would provide wide-angle antenna beams on each/every node.

It would have been obvious to one skilled in the art at the time of the invention to modify the combination, such that the signaling channel includes a wide-angle antenna beam at each of the nodes, to provide to allow uniform radiation of signals throughout a desired area (such as a sector or cell).

Claims 17 and 34 rejected under 35 U.S.C. 103(a) as being unpatentable over Briley/Honcharenko in view of Hughes et al. GB2330734A (hereafter referred to as Hughes).

As per **claims 17 and 34**, the combination teaches claim 12 **but is silent on** comprising dynamically spreading the communication signal over multiple routes among the nodes and reassembling the signal at a predetermined node.

One skilled in the art realizes that satellite-to-satellite communication to connect two user around the world is known (eg. satellite crosslinks and/or multiple uplink/downlink hops are required to navigate the globe).

One skilled in the art also realizes that packet communications provides “spreading a signal over multiple routes among the nodes and reassembling the signal at a predetermined node (eg. similar to TCP/IP).

Hughes teaches routing signals through a wireless communication system comprising a network of linked nodes (title) whereby information is routed/hopped from node to node until it reaches its destination node. Information may be sent on different paths or may be split between two (or more) paths (abstract).

It would have been obvious to one skilled in the art at the time of the invention to modify the combination, such that it can dynamically spread the communication signal/message over multiple routes among the nodes and reassembling the signal/message at a predetermined node, to take advantage of the efficiencies of packet data communications.

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Claims 37-40 and 42 rejected under 35 U.S.C. 103(a) as being unpatentable over Briley/Honcharenko and further in view of Suzuki et al. JP-03165105 (hereafter referred to as Suzuki).

As per **claims 23 and 31**, the combination teaches claim 2 and bi-directional communications (C3, L3-15 teaches phone calls to/from PSTN and user) **but is silent on** said phase shifters are analog phase shifters.

Suzuki teaches an electronic scanning antenna that uses analog phase shifter (abstract).

It would have been obvious to one skilled in the art at the time of the invention to modify the combination, such that analog phase shifters are used, to provide means for accurately setting the beam control.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen M. D'Agosta whose telephone number is 703-306-5426. The examiner can normally be reached on M-F, 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Trost can be reached on 703-308-5318. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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12-2-04


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